ROYAL BOTANIC GARDENS, KEW.

BULLETIN

OF

MISCELLANEOUS INFORMATION.

No. 2. 1905.

BOTANICAL SURVEY OF THE EMPIRE.

For half a century Kew, amongst other things, has been engaged in the preparation and publication of a series of floras of our Colonial and Indian possessions. This amounts in the aggregate to a Botanical survey of the Empire. It is still incomplete, but at no time has the work ever been intermitted.

In so long a period the official action by which the enterprise was initiated and the successive steps by which it has been carried on progressively are easily lost sight of. It is therefore desirable for official and public information to print the more important documents available connected with it. These have only been recovered after a troublesome search at the Record Office, the Colonial Office, and at Kew.

The Kew Herbarium is now the largest in the world. Owing to the close connection between Kew, the Colonies, and India, it has been the recipient of vast collections illustrating their vegetation. It is the work of the Herbarium staff to name, preserve, and arrange these, so as to be available for reference and study. The Kew Herbarium therefore affords a standard of plant-nomenclature throughout the Empire. What may be called the "type-specimens" at Kew are in constant use for comparison by botanists of all nationalities who visit it for the purpose.

The activity of the British race in geographical exploration and its consequence Colonial development has always been so great that the influx of new material into the Kew Herbarium has, notwithstanding repeated additions to the staff, always been more than could be absorbed even with the most unremitting energy. Yet till such material has been digested and incorporated with the arranged collections, it is useless for any scientific purpose. However keen for research, the members of the Kew staff have constantly the cup of Tantalus held to their lips, as they have little leisure apart from the performance of their routine duties. These however in some degree mechanical, are not wholly so, and their efficient performance requires scientific knowledge and ability of a relatively high order.

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It is obvious that in carrying out any scheme for a botanical survey of the Empire based on material preserved at Kew, the staff could do little beyond the preliminary work, in itself not the least important, of preparing and coordinating that material. For the literary task of description and preparing successive works for the press, it has had largely to rely on the assistance of outside and independent botanists. To these it, however, has necessarily to prescribe adhesion to a uniform plan and a standard nomenclature, and it further gives editorial supervision and such aid as will ensure accuracy in citation. Such external assistance has been remunerated on a moderate scale from grants made by the Home, Colonial, and Indian Governments. Members of the staff have also been paid for work done in their private time.

After this preliminary explanation, it remains to give briefly the official history of the several undertakings which have so far been comprised in the whole enterprise.

Flora Boreali-Americana.

This was the first of the Colonial Floras. It appears to have been published "under the authority and at the expense of the Secretary of State for Colonial Affairs." It was the work of Sir William Hooker, who was at the time Regius Professor of Botany in the University of Glasgow. It was illustrated with 138 plates, and on that account, as was customary with scientific works of this period, was issued in quarto form. It appeared in parts at intervals from 1829–40. The full title is given as containing information of interest :—

"Flora Boreali-Americana; or, the Botany of the Northern Parts of British America: Compiled principally from the Plants collected by Dr. Richardson and Mr. Drummond on the late Northern Expeditions, under command of Captain Sir John Franklin, R.N. To which are added (by permission of the Horticultural Society of London), Those of Mr. Douglas, from North-West America; and of other Naturalists. By William Jackson Hooker, LL.D., F.R.A. & L.S., Member of the Imperial Academy Naturæ Curiosorum, Honorary Member of the Royal Irish Academy, etc., etc., and Regius Professor of Botany in the University of Glasgow. Illustrated by numerous Plates. Published under the authority of the Right Honourable the Secretary of State for Colonial Affairs. London: 1829–40. 2 vols., 4to."

Botany of the Antarctic Voyage.

Dr. (afterwards Sir Joseph) Hooker was attached in the Antarctic expedition of the Erebus and Terror, under the command of Sir James Ross, in the years 1839–43, as assistant-surgeon of the Erebus and botanist to the expedition. The Lords Commissioners of the Admiralty entrusted him in 1843 with the publication of the results.

The following statement of how this was accomplished is taken from the preface to the Flora of Tasmania :—

I. Flora Antarctica.

Part I.—Flora of Lord Auckland and Campbell's Islands. Date of publication, 1843–1845; pp. 208; Species 370; Plates 80 (and Map); Species figured 150.

Part II.—Flora of Fuegia, the Falkland Islands, &c. Date of publication, 1845–1847 ; pp. 366 ; Species 1,000 ; Plates 120 ; Species figured 220.

The Cryptogamic portions of these parts were also issued separtely.

Part III.—Flora of New Zealand. Date of publication, 1851–1853. Vol. 1, pp. 355 ; Species (Phænog.) 730 ; Plates 70 ; Species figured 83. Vol. 2, pp. 378 ; Species (Cryptog.) 1,037 ; Plates 60 ; Species figured 230.

Part IV.—Flora of Tasmania. Date of publication, 1853–1859. Vol. I, pp. 550 (with Introd. Key, &c.) ; Species (Dicot.) 758 ; Plates 100 ; Species figured 138. Vol. 2, pp. 422 ; Species (Monocot. and Acot.) 1445 ; Plates 100 ; Species figured 274.

Total, 6 volumes, containing about 3,000 species in all ; and 530 plates, illustrating 1,095 species.

It was further stated : –

"The grant made by the Treasury to aid in the publication of the Botany of the Antarctic Voyage was £1,000, to be expended solely in the drawing and lithographing of 500 quarto coloured plates. These, with the descriptive matter, have been given by the Author free of all cost, and of all share in the proceeds of the undertaking, to the Publisher, who has thus been enabled to bring out the series at a very much more moderate price than any similar work."

The Government of Tasmania awarded Sir Joseph Hooker a grant of £350 in respect of the Flora of that Colony, and that of New Zealand the same sum in respect of the similar service.

That noble series of volumes was also in quarto, and however suitable for the Library, were not adapted for practical use, Sir William Hooker, who became Director of Kew in 1841, proposed, when the Flora of Tasmania was approaching completion, that the series should be continued in a less expensive way, "in 8vo., without plates, scientific yet intelligible to any man of ordinary education."

Sir William Hooker to Colonial Office.

Royal Gardens, Kew.
May 14th, 1857.

Sir,

Botany is not now what it once was, a science confined to the learned, and of little or no benefit to the people at large. In the present day, as is well known, it has a practical bearing on numerous trades and professions ; and a familiarity, to a certain extent, is of essential consequence. Our Colonists and travellers in our Colonies repeatedly and anxiously inquire, but in vain, what book they can consult on the countries they are about to visit ? To the honour of the Colonial Office, the first colonial "Flora" that ever appeared, namely, that of "*British North America*," was published in 1840 (by myself), under the authority (and at the expense of) "the Secretary of State for Colonial Affairs." This was the result of several journies and voyages undertaken to explore the more northern and western territories, by Franklin, &c., &c., and appeared in 2 volumes 4to., with 240

plates, and an excellent map of all the British possessions. Since then a valuable Flora of the "*Falkland Islands*," and of our "*Antarctic Possessions*;" another of "*New Zealand*," and now of "*Van Diemen's Land*," have appeared. These, in 4to., with numerous plates, maps, &c., have been published by Dr. Hooker, "under the authority" of "the Lords of the Admiralty." But these, valuable and important as they assuredly are, are on too expensive a scale to be generally useful. What I would venture to suggest is, a work in 8vo., without plates, scientific yet intelligible to any man of ordinary education; and, the country that I particularly have in view is the British West Indian Islands, so rich in useful vegetable products. I have reason to know that a very able botanist, Dr. Griesbach, is only deterred from publishing this Flora, by the fact that such works are not remunerative to the author, who is necessarily put to great expense in the preparation. This Flora should appear in two volumes 8vo., each of about 500 pages. To secure the author from positive loss, a sum of £300 would be required; and then, and only then, he would be justified in carrying out the publication. How far the Secretary for the Colonies may deem it right to provide such a grant, must be left to his honourable consideration and judgment.

I have &c.,
(Signed) W. J. HOOKER,
Director.

The Principal Secretary of State
for the Colonies.

COLONIAL OFFICE TO KEW.

Downing Street,
12th June, 1857.

SIR,

I am directed by Mr. Secretary Labouchere to acknowledge the receipt of your letter of the 14th ultimo, suggesting that a sum of £300 (Three Hundred Pounds) should be granted by Her Majesty's Government in aid of the publication of a work, to serve as a Flora of the West Indies, by Dr. Griesbach.

Mr. Labouchere has much pleasure in informing you that the Lords Commissioners of the Treasury have acceded to his recommendation that a sum of Three Hundred Pounds (£300) should be sanctioned for this service.

I am to transmit to you the enclosed copy of a letter from the Lords Commissioners, and to request that you will make any suggestions you may have to offer as to the payment of the money and the superintendence of the work.

I am, Sir,
Your most obedient
Humble Servant,
(Signed) C. FORTESCUE.

Sir William Hooker.

In an article in the *Natural History Review* for 1861, pp. 257–8, there is an interesting reference as to the statesman to whom the credit is due of actually launching the scheme.

"Something more, however, was required to move the Government to consider the subject, than the officially unsupported representations of a single scientific man, whose exertions would have met with little success but for the happy accident of a gentleman of scientific attainments, in fact, an excellent botanist, holding, for a short period, the office of Parliamentary Secretary to the Colonies. This was Mr. J. Ball, than whom no one better knew how much was wanted, and how much might be effected by a little timely aid from Government, and who warmly took up the subject, so successfully representing to Mr. Labouchere, then Secretary of State for the Colonies, the expediency and utility of such undertakings, that Sir W. Hooker was desired to name a Colony of which he thought it desirable to publish a Flora, the extent of the work required, and the author he would recommend to conduct it. After full deliberation the British West Indian Islands were selected for the experiment."

This was the first of the series which is still in progress. Sir William Hooker, as will be seen later, pointed out it "was commenced before the general plan was entertained; and neither the plan, size, nor topography of the work, nor the sequence of the orders, are uniform with the Floras since undertaken."

It was published in 1864, and Dr. Grisebach expresses his thanks "to Sir William Hooker, who has been the real founder and supporter of the work, and to Dr. J. D. Hooker, without whose constant assistance in overlooking the press and advising on scientific and editorial subjects, it could never have been completed."

About 1859, Sir William Denison (Governor-in-chief of Australia) suggested to the Colonial Office the publication of a scientific history of the Australias and even of the Colonies generally. The scheme was considered, but it was too vast in conception, and in many branches of natural history it would have been impracticable for lack of material.

The Duke of Newcastle, however, decided to take it up as far as Botany was concerned :—

COLONIAL OFFICE TO KEW.

Downing Street,
5th November, 1859.

SIR,

I am directed by the Duke of Newcastle to acquaint you that Her Majesty's Government have under their consideration a project for collecting the materials of a National Work on the Astronomical features, the terrestrial physics, the botany, zoology, and geology of the Colonial Possessions of the British Empire, and that pending the preliminary enquiries to be made in the several Colonies, with a view to the institution of practical proceedings for promoting the preparation of the work in question, His Grace is now engaged in ascertaining the amount of remuneration which should be provided for the persons who may be willing to devote their time and labor to the proposed undertaking.

I am, therefore, desired to request that you will have the goodness to state whether it would be in your power to recommend a

fit person to act as a practical Botanist on the proposed Scientific Commission, and at what rate of remuneration ;—whether beyond mechanical assistance, which would be provided by the Colonies, such person would require the co-operation of Scientific Assistants ;—and what would be a proper rate of remuneration for them to expect ;—and the cost of Instruments.

I am,
Your obedient Servant,
T. FREDERICK ELLIOT.

Sir W. Hooker.

Sir William Hooker's reply embodied the proposals which he had already made in his letter of May 14, 1857. They were accepted, and the series of Colonial Floras was fairly launched :—

DUKE OF NEWCASTLE TO SIR W. DENISON.

(Extract.)

Downing Street,
June 28th, 1860.

I am happy to acquaint you that extensive collections on the botany of several of the Colonies are in the hands of the accomplished and energetic Director of the Royal Gardens at Kew, and that, by order of the Government, publications of some of these Colonial Floras are in course of being produced, under his superintendence, which I have requested him to arrange in one form so as to expand into a regular series, and to be capable of being procured separately or collectively as may suit the wants of purchasers. The Australian is amongst the earliest of which I hope to see the publication thus undertaken.

Flora of Hong Kong.

This was the first actually projected by the Colonial Office under the new scheme. It was entrusted to George Bentham, Esq., a distinguished botanist who, from 1854 to the end of his life, collaborated with Kew.

COLONIAL OFFICE TO KEW.

Downing Street,
20th July, 1860.

SIR,

In reference to your letter of the 19th January last, on the subject of the publication of a Flora of the Colony of the Hong Kong, I am directed by the Secretary of State to inform you that the Lords Commissioners of the Treasury are prepared to issue the sum of £150 to Mr. Bentham as compensation for his authorship of the Flora of Hong Kong so soon as it shall have been notified to them that the work has been published, and their Lordships will

further sanction the purchase of 100 copies of the said work at a cost not exceeding £100.

I am, Sir,
Your obedient Servant,
C. FORTESCUE.

Sir W. Hooker.

COLONIAL OFFICE MINUTE.

As the Hong Kong Flora has been produced so promptly, and in such creditable form, I would submit that it would be well to ascertain from Sir W. Hooker what would be the best means, and the probable cost, of publishing some of the chief Australian Floras. As yet only the insular Floras of that part of the world have been produced. The present letter would merely elicit information by which to judge whether any project should be offered to the Treasury.

T. FREDERICK ELLIOT,
FREDERIC ROGERS,
CHICHESTER S. FORTESCUE.
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The *Flora Australiensis* was next taken in hand.

COLONIAL OFFICE TO KEW.

Downing Street,
26th February, 1861.

SIR,

As the Hong Kong Flora is now completed, I am directed by the Duke of Newcastle to state that he will be glad to be favoured with your opinion on the expediency, and on the best method of publishing the principal Floras of Australia, and on the probable cost of the undertaking.

Seeing that the work has already been accomplished for Tasmania and New Zealand in the accounts which were published, with great credit to their author, Dr. Hooker, among the records of Sir James Ross's Australian Voyage, His Grace presumes that attention should next be turned to the Colonies situated on the mainland of Australia, viz., New South Wales, Victoria, South Australia, Western Australia, and Queensland.

It would be desirable to form an idea of the number of volumes which the Floras of these territories would fill if prepared in the same style as that of Hong Kong, and the probable cost of them, on the assumption that with each volume should be printed about 50 plates of a plain and useful description.

In making these inquiries, it is taken for granted that the requisite materials for the work exist in England. If fresh collections should be necessary, this would materially affect the question.

I am desired to request that you will have the goodness to furnish at the same time a list of any other Colonial Floras which

may have been already published, or ordered for publication together with a statement of the progress of the latter.

I am, Sir,
Your most obedient Servant,
T. FREDERICK ELLIOT.

Sir William Hooker.

The Treasury declined to sanction the publication of the work at the expense of the Home Government :—

COLONIAL OFFICE TO KEW.

Downing Street,
24th April, 1861.

SIR,

With reference to your letter of the 28th February last, I am directed by the Duke of Newcastle to acquaint you that His Grace brought under the notice of the Lords Commissioners of the Treasury the considerations in favour of publishing an Australian Flora, in the same shape as the recently-published Flora of Hong Kong, at the expense of this country, but that adverting to the wealth of the several Colonies in Australia, and to the sense which they have shown of the interests of science and commerce, their Lordships have stated that they think that any works of the proposed description may be left to the enterprise of the Colonies themselves, and that there are no sufficient reasons to warrant their being undertaken at the cost of this country.

The Duke of Newcastle does not feel that he would be justified in questioning the conclusion thus arrived at by the Lords Commissioners of the Treasury as the proper guardians of the Imperial Exchequer.

At some future day the several answers received from all the British Colonies on their collections of Natural History, and on the extent to which they have yet been published, will be carefully reviewed, and the question can then be considered whether it will be advisable to put the Australian Governments in possession of the work which has been published for Hong Kong, and to ascertain whether they would be disposed to authorise a similar publication for Australia at the expense of the Colonial Treasuries.

I am, Sir,
Your obedient Servant,
T. FREDERICK ELLIOT.

Sir William Hooker.

The difficulty was, however, speedily overcome :—

GOVERNOR SIR G. BOWEN TO THE DUKE OF NEWCASTLE.

Government House,
Brisbane, Queensland,
30th July, 1861.

MY LORD DUKE,

I have the honour to report that I received by the last mail a letter from Sir William Hooker, containing a proposal from

Mr. Bentham for the publication of a Flora of Australia on a plan similar to that of the "Flora Hong Kongensis," lately published by that gentleman under the authority of the Colonial Office.

2. It appears from Mr. Bentham's circular that the Lords Commissioners of the Treasury, "adverting to the wealth of the several Colonies in Australia and to the sense which they have shown of the interests of science and commerce, have stated that they think that any works of the proposed description may be left to the enterprise of the Colonies themselves, and that there are no sufficient reasons to warrant their being undertaken at the cost of this country," *i.e.*, of the Imperial Treasury.

3. I have recommended the proposed undertaking to the favourable consideration of my Government; and by the enclosed Minute of Council it will be seen that Queensland will be ready to bear its fair proportion of the expense if the other Australian Colonies should also be found willing to co-operate.

4. In my reply to Sir William Hooker's letter, I have suggested that he should formally ascertain through the Secretary of State if the other Australian Colonies are prepared to give their co-operation to so desirable an object. I have no doubt that they will be found willing.

I have, &c.,
(Sgd.) G. F. Bowen.

P.S.—Since the above dispatch was written, I have been informed that Victoria, New South Wales, and South Australia will join Queensland in guaranteeing the required sum of £250 per volume. Sir John Young and Sir Henry Barkly think, and I quite agree with them, that Mr. Bentham should avail himself of the co-operation of Dr. Müeller, the Government Botanist of Victoria.

(Sgd.) G. F. B.

The work was immediately taken in hand by Mr. Bentham, who occupied a room in the Kew Herbarium for the purpose. The first volume was published in 1863, and the seventh and last in 1878. The *Flora Australiensis* is, by general consent, a masterly performance and a model for all subsequent work of the same kind. Its value was generously acknowledged by the Colonial Office, as well as the aid which Kew had rendered in its progress. The *Natural History Review* for 1863 (pp. 449–507) contains an interesting discussion of its scientific aspects.

Colonial Office to Kew.

Downing Street,
9th August, 1878.

Sir,

I am directed by the Secretary of State for the Colonies to acknowledge the receipt of your letter of the 24th July, calling his attention to the publication of the seventh and last volume of the Flora Australiensis, by Mr. Bentham, late President of the Linnean Society of London.

2. I am to request that you will convey to Mr. Bentham the expression of the Secretary of State's gratification at learning that

this important work, which Sir Michael Hicks Beach is aware has long engaged Mr. Bentham's attention, and which will remain a valuable and exhaustive record of the Botany of the Australian Colonies, has been brought to a satisfactory termination.

3. Sir Michael Hicks Beach will have pleasure in transmitting a copy of the correspondence to the Australian Governors, and for communication to Dr. von Müeller, who has so largely and generously contributed to the success of the undertaking.

4. A copy of Mr. Bentham's work has been ordered for the use of the Library in the Colonial Office.

5. Sir Michael Hicks Beach feels, no doubt, that the facilities which you have afforded to Mr. Bentham, in carrying on the studies necessary for the elaboration of the work, have been of great use to him, and that, as on many previous occasions, the Colonies are indebted to yourself for much personal care and attention.

I am, Sir,
Your most obedient Servant
(Sgd.) ROBERT G. W. HERBERT.

Sir J. Hooker, K.C.S.I., C.B.

Sir William Hooker recorded the commencement of the series in his report for 1861, printed with the Parliamentary Estimates for 1862–3.

"The most important step, however, taken in this department, has been the commencement of a uniform series of inexpensive *Colonial Floras*, which are urgently required by colonists, manufacturers, and travellers, as well as by scientific botanists, horticulturists, and amateurs, but which, owing to the labour and expense of preparing them, and the necessity of doing this in such an establishment as the Herbarium at Kew alone affords, can never be undertaken by private individuals, unaided by Government."

In the meantime, Sir William Hooker had drawn up, in May, 1863, for the Colonial Office, the following memorandum, in which the details of a comprehensive scheme were completely worked out.

Colonial Floras.

Now that satisfactory progress has been made in the publication of Floras of several of the British Colonial possessions, and the utility and feasibility of the project established, it appears desirable to circulate the following statement, in the hope of stimulating the few Colonies which have hitherto not joined in this undertaking to give it their support.

The publication by Government of a series of inexpensive portable 8vo. works, illustrative of the vegetable products of the British possessions, has long been contemplated by the Director of the Royal Gardens of Kew. To him, in his official capacity, incessant applications for information on the vegetable products of our Colonies are made, by the Home and Colonial Governments, and by private individuals, especially merchants and manufacturers; and he is habitually applied to by travellers and

emigrants for the names of such books as will enable them to obtain precise information about the plants of the different Colonies. Under these circumstances he has, in his annual Reports to Parliament on the progress of the Royal Gardens, and of its Museum of vegetable products, officially expressed his opinion that it is the duty of the department under his control to provide materials and facilities for efficiently publishing such works; adding that the want of them is a great obstacle to the development of the productive resources of the Colonies, and that they are indispensable for the purpose of providing a fixed nomenclature for their plants, without which it is impossible for himself and the Colonists to carry on a correspondence upon these and kindred subjects.

Again, as regards the Colonies themselves:—as these increase in extent and wealth, there arises a large class of settlers desirous of obtaining a knowledge of the plants of their adopted country, and of possessing the means of teaching their children Botany, whether as an amusement, or as a means of developing their observant and reasoning faculties. Nor are practical proofs wanting of the losses we have suffered through ignorance of the proper names of our colonial productions; for it is a well-known fact that a large proportion of those which were sent to the Great Exhibition, in 1851, and to that in Paris, in 1855, were rendered almost valueless by the absence of any means of procuring reliable information regarding them, or of giving them names by which they could be again known. In the case of the timbers especially, the same name is applied to several trees in one colony, and to others in other colonies; and these names being often purely arbitrary (applied by memory, or originating in a whim, or in an erroneous idea of the tree to which they are given), are soon lost sight of, and often wholly forgotten. Meanwhile the manufacturer or merchant in England, or the colonist abroad, vainly asks for the wood he saw in the Exhibitions, or reads of in their records; and lastly, in the Exhibition of 1862 (though there was a marked improvement in this respect), we met with many of these same woods under yet other names, as misleading as the old ones.

These representations having been laid before the Secretary of State for the Colonies, together with a despatch from Sir William Denison (then Governor-in-Chief of Australia), recommending the publication on the part of the Home Government of a complete scientific history of the Australian, and indeed of all our Colonies, his Grace the Duke of Newcastle instructed Sir William Hooker to draw up a plan for the publication of Colonial Floras in an inexpensive form and in the English language, stating the number and extent of volumes required, the estimated outlay for authorship, the amount of guaranteed sale that would induce a publisher to undertake the series, and the probable selling price of the volumes to the public.

After a very careful consideration of the subject, and consultation with several eminent botanists and many publishers, it was resolved to recommend:—

1. That the series of Colonial Floras should consist of about twelve separate and independent publications, devoted to the plants of as many Colonies or groups of Colonies.

2. That these Floras should in the first instance be confined to concise English descriptions of the flowering plants and ferns, with notices of their uses, native names, and localities; and that each should be prefaced by a short introduction to Descriptive Botany, sufficient to enable a novice to make out his plants; and by a brief sketch of the vegetation of the Colony.

3. That the volumes should be 8vo., and that each should contain not less than 500 pages, with descriptions of 1,000 plants.

4. That the several Floras should be as uniform as possible in typography, in the sequence of orders, in the nomenclature of genera and species, and in the application of botanical terms, &c., &c.

5. That the author's remuneration should not be less than £150 per volume, to be paid by the Home or Colonial Government on its publication; the author to have no participation in the proceeds of the sale, thus enabling the publisher to fix as low a selling price as possible.

6. That the price per volume of 500 pages should not exceed 20*s*. [This could not be done now—1906.]

7. That to ensure the publisher against loss, 100 copies should be taken by the Colonial Government on the day of sale, at the selling price.

8. The following is a list of the several Floras recommended, the number of species they were supposed to contain, the number of volumes to which each would extend, and the sum required for authorship and for purchase of 100 copies. It need hardly be added that the expense would be spread over many years.

	No. of Plants.	Vols.	Author's Remuneration.	Copies Purchased.	Total.
			£	£	£
1. Australian Colonies, including Tasmania	8,000	8	1,200	800	2,000
2. South African Colonies...	10,000	10	1,500	1,000	2,500
3. British North America, Pacific to Atlantic	2,000	2	300	200	500
4. West Indian Colonies.....	2,000	2	300	200	500
5. New Zealand	1,200	1	150	100	250
6. Ceylon	3,000	3	450	300	750
7. Hong Kong	1,000	1	150	100	250
8. Mauritius and the Seychelles	1,000	1	150	100	250
9. British Guiana.....	2,500	2	300	200	500
10. Honduras	1,500	1	150	100	250
11. West African Colonies ...	2,000	2	300	200	500
12. British India	12,000	10	1,500	1,200	2,700

It will be observed that the number of volumes does not in all cases bear the same proportion to the number of plants. This is because in some Colonies (as in Hong Kong) the proportion of orders and genera to species is very large, and their descriptions take up proportionately more room.

Of the above Floras :—

1. A grant for that of Australia was sanctioned in 1862 by its several Colonial Governments, who have commissioned Mr. Bentham, President of the Linnean Society, to undertake it. The first volume is now ready for publication.

2. The South African Flora was commenced in 1860 by Dr. Harvey, Professor of Botany at Trinity College, Dublin, and Dr. Sonder, Professor of Botany at Hamburg, at their own risk (and certain loss), when the Colonial Government stepped in to their aid with a grant of £150 per volume.

3. The British North American Flora, including British Columbia and Vancouver's Island, has not yet been sanctioned, but it is at this moment under the consideration of the Governor in Council.

4. The West Indian Flora was commened in 1858, under the auspices of the Secretary of State for the Colonies, by Dr. Grisebach, Professor of Botany at Goettingen, and is far advanced towards completion. This was commenced before the general plan was entertained, and neither the plan, size, nor typography of the work, nor the sequence of the orders, are uniform with the Floras since undertaken.

5. The New Zealand Flora was commissioned by the Government of that Colony in 1862, and entrusted to Dr. Hooker, who is desired to extend it to two volumes, embracing the mosses, lichens, seaweeds, and fungi, which are far more numerous and difficult than the flowering plants.

6. The enumeration of Ceylon plants, with localities and native names, but without descriptions, except of the new species, is nearly completed by Mr. Thwaites, Director of the Royal Botanic Gardens in Ceylon. No Government assistance has been extended to it, but there is little doubt that the Colonial Government will commission the same botanist to follow it with a descriptive Flora on the plan of the others enumerated.

7. The Hong Kong Flora has been completed by Mr. Bentham. It is the first of those published according to the above plan, and was paid for by a grant from the Secretary of State for the Colonies. It is considered the model as regards arrangement and typography after which the others will be published.

8. The collections from the Mauritius are not yet sufficiently complete to enable its Flora to be undertaken, and of the plants of the Seychelle Islands nothing whatever is known.

9. Considerable materials are preserved at Kew towards a Flora of British Guiana, but many districts remain to be botanically explored before its vegetation can be considered as fully known. The present Governor, however, has engaged an able botanist to make explorations and collections.

10. Of the Flora of Honduras little is known, and collections are urgently required. The genera and many littoral and annual species being common to this country and Guiana, it is probable that these two Floras may be advantageously combined in one work.

11. Collectors are extremely wanted in the West African Colonies. Though from the Colonies themselves the materials are quite insufficient, immense collections, teeming with plants of the greatest scientific and commercial interest, have within the

last ten years accumulated from various parts of the East and West Coasts, and from the interior of tropical Africa, especially those sent by Baikie, Barter, Mann, Livingstone, Meller, Kirk, Speke, Grant, and Petherick, &c., &c. These include many (perhaps most) of the plants of our West African Colonies ; but they cannot be published without Government aid, and it is most desirable, both for the interest of science and of the Colonies, that these and the other collections of so many of our National expeditions, conducted at great cost and at a great sacrifice of life, should be combined into one Flora of Tropical Africa, on the plan of the above Colonial Floras, for which a grant of £1,200 from the Treasury would be sufficient.

12. Ample materials are preserved at Kew for a Flora of British India, towards which extensive preparations have been made by Drs. Hooker and Thomson. The first volume of a "*Flora Indica*" indeed was published by these gentlemen in 1855, at their own cost ; but the Honourable East India Company declining either to indemnify the authors for their outlay, or to encourage them to continue the work, it was reluctantly relinquished.

W. J. Hooker,
Director of the Royal Gardens, Kew.

Royal Gardens, 1863.

Handbook to Ceylon Flora.

The following quasi official statement appeared in the *Natural History Review* for 1861 (pp. 260, 261) :—

"An unaided effort to develop a knowledge of the plants of our Colonies, is the "*Enumeratio Plantarum Zeylaniæ*" of Mr. Thwaites, the accomplished Director of the Peradenia Botanic Garden. On Mr. Thwaites' appointment to Ceylon, in 1849, he found the want of any guide to the indigenous plants of the island a most serious drawback, to himself especially, who had no previous knowledge of tropical botany ; moreover, he arrived about the time when those energetic measures were being adopted by the Government and the settlers, which have resulted in Ceylon rapidly rising to the position of the most prosperous of our Eastern possessions. With the exception of Moon's indescribably bad catalogue of Ceylon plants (containing not half the indigenous plants, and fully half of these wrongly named) no work on the plants of the island had appeared, since the days of Burmann and Linnæus, nor were there any means of studying its Flora, except by aid of the expensive and always incomplete Indian Floras, or the more voluminous general systemata of all known plants. Fortunately, a partially named, but incomplete, Ceylon Herbarium had been formed at the Botanic Garden by Mr. Thwaites' predecessors, Moon and Gardner ; this the new Director at once commenced to arrange to increase by collecting himself and sending out collectors, and to study with diligence, analysing the genera and communicating valuable papers on them to the Journal of Botany. He also numbered and distributed the duplicates, sending the first set to the Kew Herbarium, where they were named, and the corresponding names returned to him. After eight years

labour, Mr. Thwaites commenced with these materials, his "*Enumeratio*," which contains the names, with reference to authorities, of all Singhalese plants, their localities, synonymy, native names and uses, notes where required, and descriptions of all little known or new genera and species. The MS is sent as prepared to Kew, and is printed and published in London. The first number appeared in 1858, and the fourth, concluding the Dicotyledons, is now in the press; these are extremely carefully and well done, especially considering that the author works so far from the Libraries and Herbaria of Europe. It is to be hoped that it will be speedily followed by a full Flora of Ceylon, on the plan of that of the Cape of Good Hope, under the authority of the Home or Colonial Government."

This hope was never realized at Dr. Thwaites' hands. But his successor commenced a *Handbook to the Ceylon Flora* with an *Atlas of Plates*. The first volume published, 'under the authority of the Government of Ceylon,' appeared in 1893. Dr. Trimen's untimely death, in 1896, left it unfinished. It was finally completed, in 1900, by Sir Joseph Hooker.

Kew to Colonial Office.

Royal Botanic Gardens, Kew,
March 8th, 1897.

Sir,

I have the honour to acknowledge the receipt of your letter of March 6th (4560/97) respecting the completion of the *Handbook to the Flora of Ceylon*, left unfinished by the late Dr. Trimen. Of this work three volumes have been published. It appears to me that two additional volumes will be necessary to bring it to a conclusion. This is one more than was originally contemplated. The material in Dr. Trimen's hands outran the space assigned. He proposed to meet the difficulty by abandoning any attempt to deal with the Monocotyledons. But as this group includes the grasses, the limitation would detract very much from the value of the undertaking and would still leave it incomplete.

2. For the last thirty years the publication of a Flora in a popular form has earnestly been discussed by residents in the Colony. The accomplishment of the book was an object which Dr. Trimen had definitely in view when he accepted the appointment which he has filled with such ability. For many years he was engaged in preliminary preparation in a systematic botanical exploration of the Colony and in accumulating material. The popular form into which he was desired to throw the result of his labours involved a certain diffusness, and this, perhaps, in some degree, accounts for the work having outrun the dimensions originally assigned to it.

3. There can be no doubt that the result met with universal approval. The Ceylon Observer, for June 30, '96, in noticing Dr. Trimen's retirement observes:—"It is impossible to over estimate the value of this work for practical, educational, and scientific purposes in the colony."

4. I do not think that the present Director could be expected to take up Dr. Trimen's work till he has acquired some familiarity

with tropical vegetation in the East. This is not to be done in a day for the purposes of a definitive work of this kind, which can only be attempted with trained experience. In the meantime, it is desirable to bring the work to a conclusion with as little delay as possible.

5. Under the circumstances Sir Joseph Hooker has most generously offered his own services. In doing so he is influenced by the fact that, in 1864, he assisted the late Dr. Thwaites in his '*Enumeration of Ceylon Plants.*' He has just brought his *Flora of British India* to a conclusion, the work of a quarter of a century. He estimates that the completion of the *Handbook to the Flora of Ceylon* would occupy him for two years. I need hardly say that there is no living botanist more competent for the task. It would, of course, be proper to offer him some honorarium for his labours. I do not think that this should be less than £250 (two hundred and fifty pounds) per volume or £500 in all. The expenditure would be spread over two years.

6. Of the terms of arrangement with the publisher, I have no information. These would, no doubt, be settled with Messrs. Dulau & Co., by the Colonial Government.

I am, &c.,
W. T. THISELTON-DYER.

John Bramston, Esq., C.B.,
Colonial Office,
Downing Street, S.W.

COLONIAL OFFICE TO KEW.

Downing Street,
20th April, 1897.

SIR,

I am directed by Mr. Secretary Chamberlain to inform you, with reference to the letter from this Department of the 12th ultimo, that the Governor of Ceylon has signified by telegram, his acceptance of your proposals relative to the completion of Dr. Trimen's work on the Flora of Ceylon.

I am to request that you will communicate with Sir Joseph Hooker on the subject and invite him to take the work in hand on the terms which you have suggested.

I am, Sir,
Your most obedient Servant,
(Sgd.) FRED. GRAHAM.

The Director of
The Royal Botanic Gardens,
Kew.

Flora Capensis.

The following statement is taken from the *Natural History Review* for 1861, p. 259 :—

" Another Colonial Flora, the ' Flora Capensis ' of Drs. Harvey and Sonder, which will embrace the plants of all Africa south of

the Tropic of Capricorn, was begun on the same general plan, but under very different auspices, and without any certain prospect of Government aid. This was also brought about by the representations of Sir William Hooker, who urged its prosecution on its originator, Dr. Harvey (some time Treasurer of Cape Colony), Professor of Botany at Dublin University, and Keeper of the Herbarium there, as a work of great utility, which he was well qualified to undertake from his general attainments and personal familiarity with the Flora of the Cape. Dr. Harvey's principal objection arose from the want of authentic specimens, some of the most complete and best published South African collections being on the Continent; this was fortunately easily overcome, for Dr. Sonder, of Hamburgh, the possessor of the best of these collections, a good botanist, and author of several valuable memoirs on Cape plants, gladly accepted Dr. Harvey's offer to share the authorship with himself. Dr. Harvey undertook to print and publish the Flora at his own risk and cost, trusting chiefly to colonial subscriptions for a repayment of the outlay. These were liberally accorded, and thanks to the exertions of the Governor, Sir George Grey, and the Colonial Secretary, Rawson Rawson, Esq., a Parliamentary grant was made by the Colony towards the expenses of the first volume, and hopes were held out of its being continued to the succeeding ones."

The ultimate history of the undertaking is given in the preface to the sixth volume by Sir William Thiselton-Dyer, the present editor :—

"The third volume of the Flora Capensis was published in 1865. The following year Professor Harvey, who had been its principal author and guiding spirit, died. Although in the preface the fourth volume is referred to as "shortly to be in preparation for the press," practically nothing available relating to it was found amongst Professor Harvey's papers. Nor did his coadjutor, Dr. Sonder, who died in 1881, undertake any further part in the work.

Its continuation was urged upon Kew by Sir Henry Barkly, G.C.M.G., K.C.B., F.R.S., who was Governor of the Cape of Good Hope from 1870 to 1877. During a long official career in different parts of the Empire, this enlightened administrator, himself an ardent naturalist, never failed to foster the scientific interests of the colonies committed to his charge. Sir Joseph Hooker, at that time Director of the Royal Gardens, entrusted the task of continuing the work of Harvey and Sonder to me. But the pressure of official duties in which I almost immediately found myself immersed, left me little time for the task. It became evident that it could only be accomplished by the co-operation of numerous workers. Another difficulty was the rapid expansion of British South Africa. This led to a continuous influx to Kew of new material, which had to be determined and made available for future working up in the Flora. It was soon obvious that it would be necessary to largely extend the area comprised by the published volumes, and it was ultimately determined to do this still further so as to include, as far as possible, all known flowering plants occurring in the area between the Tropic of Capricorn and the Ocean. To the north, the present and future volumes

will therefore be supplemented by the Flora of Tropical Africa."

As the assistance of competent experts became available the result of their labours has been printed and the work has not therefore been issued, as far as the volumes are concerned, in regular sequence.

Three volumes have been published and portions of two others.

The expenses of preparation and publication have been met by grants from the Governments of Cape Colony and Natal under whose authority the work has been issued.

Handbook of the New Zealand Flora.

The following statement is taken from the Natural History Review for 1863 (p. 498) :—

"The Government of New Zealand [in 1862] commissioned Dr. [now Sir Joseph] Hooker to prepare a Manual of the Flora of its territories upon the same plan, form, and size, &c., as the Hong Kong Flora, but to include the Cryptogamic as well as Flowering plants. This is the more liberal on the part of this energetic Colony, as it had, on the completion of the volumes of the Botany of the Antarctic Expedition, which described all the New Zealand Plants then known, spontaneously proposed a grant of £350 to its author, in recognition of the scientific service he had thereby rendered to the Colony. The Manual of the New Zealand Flora is now in progress, and it is hoped that a volume will appear in the present year."

The work was actually issued in two parts : the first in 1864 and the second in 1867.

Flora of Tropical Africa.

At an early date the Foreign Office suggested that the botanical results and expeditions in Tropical Africa might be included in the scheme.

Sir William Hooker to Colonial Office.

(Extract.)

February 28th, 1861.

With regard to a Flora of West Africa, the Foreign Office has lately put itself in communication with me enquiring, for the information of Lord John Russell, what would be the expense of publishing a Flora of Tropical Africa, including all that has been discovered by our various expeditions in the interior on the Niger, or by Livingstone.

Foreign Office to Kew.

Foreign Office,
April 23rd, 1861.

Sir,

With reference to your letter of the 14th February last, I am directed by Lord John Russell to inform you that, in the opinion of the Lords Commissioners of Her Majesty's Treasury, it will be expedient to defer the consideration of the question of a publication of a Flora of Tropical Africa until the results of the present Expedition under the direction of Dr. Livingstone shall be known.

I am, Sir,
Your most obedient humble Servant,
(Sgd.) Woodhouse.

Sir W. Hooker,
Kew.

Colonial Office to Kew.

Downing Street,
December 22, 1863.

Sir,

I am directed by the Duke of Newcastle to acknowledge the receipt of your letter of the 5th instant, with a printed statement showing the success which has attended the plan of a publication of the different Floras of the British Colonies, and submitting, for favourable notice, your project of publishing one of all Tropical Africa.

The British Governments on the West Coast are quite unable, as you are aware, to contribute any pecuniary assistance towards such a work; but should your anticipations of obtaining from the Treasury the means of publishing a satisfactory account of the Flowering plants of Tropical Africa be verified, His Grace will be very glad of a result which will tend to complete the useful series of publications on the Colonial Floras, and those of other regions yielding similar productions.

I am, &c.,
(Sgd.) T. Fredk. Elliott.

Sir W. Hooker.

Kew to Office of Works.

Royal Gardens, Kew,
November 28, 1864.

Sir,

I have required some little time to give a satisfactory answer to the very gratifying letter you did me the honour to send me from the Lords of H.M. Treasury (and which I now return) on the subject of the publication of a *Flora of Tropical Africa.*

Till I was aware of this reply to the application in favour of the grant, I could not certainly undertake to say who would be the author. I felt it to be only a duty to make the offer to

Dr. [now Sir John] Kirk, the able botanist and companion of Dr. Livingstone in his important explorations, but who, I now find, is unable to undertake it.

I therefore beg to reply to the queries contained in the Treasury letter, viz. :—

1. With regard to "the mode of bringing out the work."
2. "The authorship."
3. "The price to be charged to the public."
4. "The number of copies to be reserved for public service."

1. In regard to the mode of bringing out the work, Messrs. Lovell, Reeve, & Co., eminent natural history publishers in London, have agreed to publish the four volumes at their own risk and cost, on the same conditions as they publish those of the "Colonial Floras," namely, that 100 copies shall be taken on the day of publication of each volume at the selling price (£1 per volume), and that the copyrights and profits shall be theirs. The work to be uniform with that adopted for the publication of the "Series of Colonial Floras," under the sanction of the Secretary of State for the Colonies. One volume to be issued in each of the four succeeding years, or as nearly so as possible. The descriptions to be entirely in English, and to include, besides the botanical characters, notices of the uses and properties of the plants, native names, &c. The size to be 8vo.; each volume to contain not less than 500 nor more than 600 pages.

2. In regard to "authorship."—Dr. Kirk having declined this, Dr. [now Sir Joseph] Hooker, Assistant Director in the Royal Gardens, and Professor Oliver, Librarian in the same establishment, are able and willing to undertake it during their leisure hours, with the approval of our First Commissioner. The remuneration to be £200 (out of the grant of £1,200) upon each volume on the day of publication.

3. "The price to be charged to the public."—20*s.* for each volume.

4. "The number of copies reserved for public service."—One hundred copies of each volume, to be paid for on the day of publication from the remainder of the £1,200, over and above authorship. These copies are consequently the property of the Treasury, to be disposed of by them in such manner as my Lords may deem proper.

In regard to these copies, however, I may perhaps be allowed to observe that, in the case of the Colonial Floras, those 100 copies are sent out by order of the Secretary of State for the Colonies to the respective Governors who have paid for them, and who are best competent to know how they can be most advantageously disposed of. In the present case, my Lords of H.M. Treasury, whose copies they are, may not find such a distribution convenient or practicable. In that case, if the copies, or any portion of them, are made over to the First Commissioner of H.M. Works (as the head of the Royal Gardens, and with his permission), or to the establishment at the Royal Gardens, I would gladly make the best use of them I can, sending some to our tropical African Colonies, to missionaries, &c., there, and supplying others to the many travellers and explorers in tropical Africa, and some to our

more intelligent merchants, and officers in the Navy, and sea captains who frequent the coasts.

I have, &c.,
(Sgd.) W. J. HOOKER,
Director.

The Right Hon. William Cooper, &c., &c.

TREASURY TO OFFICE OF WORKS.

16818
4955/64.

Treasury Chambers,
12th December, 1864.

SIR,

With reference to your Report of the 1st instant, I am directed, by the Lords Commissioners of Her Majesty's Treasury, to acquaint you that My Lords approve of the proposition contained in Sir W. Hooker's letter of the 28th ulto., as to the mode and conditions of the publication of the *Flora of Tropical Africa*.

Their Lordships reserve the question of the disposal of the 100 copies referred to, until the publication of the 1st volume shall have taken place.

I am, &c.,
(Sgd.) F. PEEL.

The First Commissioner of Works.

KEW TO OFFICE OF WORKS, &C.

288/68.

Royal Botanic Gardens, Kew.
July 9th, 1868.

MY LORD,

In reference to the Board's letter of December 12, 1864, transmitting the Treasury's approval of a proposal on the part of my predecessor, that the plants of Tropical Africa, which had been presented to Kew by various Government, &c., expeditions, should be published in the form of a Flora of that region, and approving an estimate for the same, I have to state that the first volume is now published, and is ready for delivery.

The conditions of publication, as defined in my predecessor's letters to the Board of 26th September, 1864, and 28th November, 1864, and approved by the Treasury, have been strictly adhered to, except that my appointment to the Directorship has delayed the appearance of the first volume and compelled me to resign almost all part in the preparation of the work, which has devolved upon Professor Oliver, who has the whole merit of the authorship.

According to the terms approved, the author (who has no share in the profits of publication) is entitled to a gratuity of £200 on the publication of each volume, and the publisher to payment for 100 copies, at 20/- per copy. Both author and publisher have faithfully performed their duties, and I have directed the latter to transmit the 100 copies to the office of H. M. Works.

I have &c.,
(Sgd.) JOS. D. HOOKER,
Director.

The First Commissioner of H. M. Works.

The subsequent history of the undertaking is conveniently summarised in the following extract from the preface to the seventh volume, by Sir William Thiselton-Dyer (August, 1898) :—

"The *Flora of Tropical Africa* has met with many vicissitudes. The immediate impulse which led the Government to sanction the undertaking was given by Dr. Livingstone on his return from the Zambesi Expedition (1858-64), to which Dr. (afterwards Sir John) Kirk had been attached as naturalist. The work having been offered to Dr. Kirk and declined by him, was entrusted, in 1864, to Sir Joseph Hooker and Professor Oliver jointly, and was to be completed in four volumes.

Sir Joseph Hooker succeeded to the Directorship of the Royal Gardens in 1865, and was, in consequence, obliged to resign the preparation of the Flora to Professor Oliver, although he contributed some share to both volumes I. and II. Professor Oliver further obtained the assistance of other botanists.

Vol. I appeared in 1868, Vol. II in 1871, and Vol. III in 1877. It was soon evident that the work would exceed the limits at first assigned to it. Not less than five additional volumes will be now required to enumerate completely and describe the known plants of Tropical Africa.

In the preface to the first volume Professor Oliver states that, for the geographical region to which he gave the name Lower Guinea, he was almost wholly dependent on the Angolian collections made, at the cost of the Portuguese Government, in 1853-61, by Dr. Frederick Welwitsch.

This botanist, Professor Oliver adds, 'has freely granted us the opportunity of inspecting his collections, which, in respect of judicious selection and admirable preservation, are without rival. His carefully accurate notes upon the fresh plants have also been at our service. Without the access to Dr. Welwitsch's Herbarium this region would have been comparatively a blank in the present work.'"

Dr. Welwitsch died in 1872, having bequeathed his Herbarium to the British Museum. This led to prolonged litigation on the part of the Portuguese Government, ending in a compromise, but the collections were no longer available for study at Kew, and Professor Oliver eventually abandoned the further prosecution of the work. He retired from his official post in 1890.

Meanwhile the publication of the first three volumes had considerably stimulated botanical research in Africa. Sir John Kirk had become Consul-General at Zanzibar, and lost no opportunity of encouraging collectors. Sir H. H. Johnston, K.C.B., H.M. Commissioner in British Central Africa, imitated his example in British Central Africa. Much valuable work in Equatorial Africa was also done by the missionaries of the Church Missionary Society. The Temperate Flora discovered on Kilimanjaro by the Rev. C. New, who was probably the first human being to reach its snow-line, and the collections subsequently made by Mr. Joseph Thomson on the mountains of East Equatorial Africa confirmed the relationships of the high-level floras of Tropical Africa with those of the northern hemisphere on the one hand and of the Cape on the other, which were first indicated by Mr. Mann's collections on the Cameroons. These relationships

raise theoretical questions of the highest interest. The various Delimitation Commissions which followed the partition of the continent each yielded botanical results of more or less value. And the addition of new territories to the Colonies on the West Coast stimulated the desire of their Governments for an investigation of their vegetable products.

The result was that an immense mass of material poured into Kew, and, though individual collections were worked out in a series of scattered papers, a general demand sprang up in foreign countries, as well as at home, for a comprehensive work which would sum up the knowledge which had been acquired, with no little expenditure of labour and even of life, of the vegetation of Tropical Africa.

The desire eventually found expression in the following letter :—

FOREIGN OFFICE TO KEW.

Foreign Office,
March 21st, 1891.

SIR,

I am directed by the Marquis of Salisbury to state to you that his attention has been called to the fact that three volumes only of the *Flora of Tropical Africa* have as yet been published, and that the want of a complete handbook describing known plants impedes their study by Her Majesty's Officers in the different parts of Africa which are now being opened up to civilisation.

A knowledge of African botany is of great practical value, as was proved by the discovery of Sir John Kirk, whilst employed as Her Majesty's Agent at Zanzibar, of a plant previously unknown, which now supplies annually £200,000 worth of india-rubber to the Zanzibar market. So, too, on the West Coast of Africa, the trade consists almost entirely of vegetable products some of which have only recently been brought to light.

Lord Salisbury is of opinion that a proper knowledge of the Flora of Tropical Africa would do much to aid the development of the territories over which this country has recently acquired an influence and he would therefore suggest that the completion of the work in question should be carried out at once.

I am, &c.,
(Sgd.) T. V. LISTER.

The Director,
Kew Gardens.

In replying to this letter I pointed out that my scientific staff was so occupied with routine work that it was impossible to treat the completion of the Flora as a matter of official duty. If, however, as in the first instance, it was regarded as an extra-official undertaking, I was willing to do my best, with such voluntary assistance as I could obtain, to assist Her Majesty's Government in getting the work completed. It was accordingly agreed that a commencement should be made in 1892. Much preliminary labour had to be accomplished, and in order to avoid the inconvenience of anticipation, provisional technical descriptions of new African plants received at Kew were drawn up by

members of the staff and officially published in the Kew Bulletin. These were available for working up subsequently in the Flora."

The first instalment was published in December, 1897. Four additional volumes have in all been issued, although not in regular sequence, and a fifth is passing through the press. In the meantime official difficulties arose between the various offices concerned of a not wholly intelligible kind, which led to a reconsideration of his position by the editor.

OFFICE OF WORKS TO TREASURY.

March 11, 1899.

SIR,

In reply to your letter of the 24th January last, No. 96,99, I am to state, for the information of the Lords Commissioners of Her Majesty's Treasury, that the Board now learn from Sir W. T. Thiselton-Dyer that he acquiesces in the scheme proposed for the publication of the *Flora of Tropical Africa*, subject to reserves which need not arise in a practical form at present, except that he prefers that the production of each part shall be a voucher for the payment.

I am, &c.,
(Sgd.) R. B. BRETT.

The Secretary, H.M. Treasury.

TREASURY TO OFFICE OF WORKS.

Treasury Chambers,
March 22, 1899.

SIR,

I am directed by the Lords Commissioners of Her Majesty's Treasury to acknowledge the receipt of Mr. Brett's letter (B. 554) of the 11th instant respecting the future arrangements for the publication of the *Flora of Tropical Africa*; and I am to convey to you an expression of their Lordships' satisfaction at the contents of that letter.

I am, &c.,
(Sgd.) FRANCIS MOWATT.

The First Commissioner of Works.

KEW TO COLONIAL OFFICE.

Royal Botanic Gardens, Kew,
December 8, 1905.

SIR,

I have the honour to enclose, for the information of the Secretary of State and for deposit in the Library of the Colonial Office, a copy of the recently-published part of the *Flora of Tropical Africa*, which is being prepared in this establishment with the aid of various botanists, under my supervision and editorship.

2. It may be convenient to bring under your notice briefly the

history of the undertaking. In 1856 Sir William Hooker projected a series of Colonial Floras, and the scheme was approved by the Duke of Newcastle, then Secretary of State for the Colonies, in 1859. The preparation of the *Flora of Tropical Africa* was sanctioned by the Treasury in 1864. The editorship was entrusted to Professor Oliver, who published from 1868 to 1877 three volumes. The work then, from the pressure of other undertakings, fell into abeyance. In 1891, at the request of Lord Salisbury, I resumed its preparation.

3. The limits of the work have grown with our knowledge of the African Continent. As now planned, the Flora will extend to nominally nine volumes, but actually ten, as it has been found necessary to divide one into two sections. Seven of the ten volumes have now been published. It is to be noticed, however, that they have not been issued latterly in consecutive order in view of the desirability of avoiding delay in printing portions which were ready for publication.

4. The second section of volume 4 is now passing through the press. Volumes 6 and 9, which will complete the work, are in an active state of preparation.

5. The work was originally published under the authority of the First Commissioner of Her Majesty's Works and Public Buildings, latterly under that of the Secretary of State for Foreign Affairs. In view of the fact that the charge of our African possessions is now under the exclusive control of the Colonial Office, I have issued the present part as under the authority of the Secretary of State for the Colonies, to whose charge the work must be held to have passed.

6. By an arrangement sanctioned by the Treasury, the Stationery Office takes one hundred copies of each instalment of the work on the day of publication, and these, as well as those previously received, are available for official use.

7. I can only, in conclusion, express the hope that this somewhat monumental and, at any rate, laborious work, may be found, as I believe certainly it will be, of real service to the material development of the resources of our African possessions. At the moment it perhaps is more appreciated in France and Germany than by our own countrymen.

I am, Sir,
Your obedient Servant,
(Sgd.) W. T. THISELTON-DYER.

R. L. Antrobus, Esq., C.B.,
Colonial Office,
Downing Street, S.W.

COLONIAL OFFICE TO KEW.

Downing Street,
29th January, 1906.

SIR,

I am directed by the Earl of Elgin to acknowledge the receipt of your letter of the 8th December and the copy of the most recently-published part of the *Flora of Tropical Africa* which accompanied it.

2. Lord Elgin desires me to thank you for the account which you have given of the history of this undertaking, and he is glad to have the opportunity of assuring you that those who are interested in the development of tropical Africa do not fail to recognise and appreciate the very great assistance which you have afforded both in the laborious but most valuable work of bringing out the Flora and in many other ways.

I am, Sir,
Your obedient Servant,
(Sgd.) R. L. ANTROBUS.

Sir W. Thiselton-Dyer, K.C.M.G., F.R.S.

Flora of British India.

No very long time elapsed before the India Office also expressed the wish that the Indian possessions of the Empire should be included in the scheme.

It is sufficient to put on record the dedication of the first volume to the Secretary of State at the time, and Sir William Thiselton-Dyer's letter announcing the completion of the work.

Royal Botanic Gardens, Kew,
March 15th, 1872.

MY LORD DUKE,

The fact of the first part of this *Flora of British India* appearing during your Grace's tenure of office, and under your instructions, affords me the welcome opportunity of following a time-honoured custom in dedicating that work to you.

I am,
Your Grace's faithful and obedient Servant,
(Sgd.) JOS. D. HOOKER.

His Grace the Duke of Argyll, K.T., F.R.S.,
Secretary of State for India.

KEW TO INDIA OFFICE.

Royal Botanic Gardens, Kew.
Feb. 13, '97.

SIR,

I have the honor to inform you that the *Flora of British India*, which has been prepared at this establishment by Sir Joseph Hooker, assisted by various botanists, and which has been published under the authority of the Secretary of State for India in Council, has now been completed. There only remains the compilation of a general index, which is a mere matter of clerical labour.

2. The achievement of so important and considerable an undertaking appears to me to require that some attention should be drawn to it. The first part was issued in 1872, and the twenty-second in December last, it thus represents the labour of a quarter of a century.

3. The result may be regarded from two points of view. It is, in the first place, a contribution to science of incalculable value. British India represents the largest area of the earth's surface, the native vegetation of which has been thoroughly worked out, enumerated, and described. The magnitude of the task may be best understood when it is stated that the Flora comprises some 14,000 species, of which 10,000 are peculiar to the country. The next most considerable undertaking of the kind is the Flora of Australia, also prepared at Kew by Mr. Bentham, but this, though itself a monumental work, is far from comparable in magnitude with the Flora of British India. The second aspect in which the work is of importance is the economic. An accurate knowledge of the actual plants, indigenous to India, is the essential starting point of any attempt to turn their useful properties to account. Upon the Flora must, therefore, be based the scientific publications of the Forest Department, and any researches upon native vegetable materials useful in commerce and the arts.

4. Sir Joseph Hooker is now in his 81st year. The completion of the Flora is probably amongst the greatest of his public services, as it has been one of the most cherished objects of his life. His devotion to the interests of our great Dependency is well known. In early life he spent four years (1847–1851) in its scientific exploration. He brought back a collection of dried plants which, for extent and value, has never been surpassed, and the duplicates of these he distributed to all the great botanical establishments of the world. He rescued from the cellars of the East India House the vast collections of plants made by previous explorers, and turned them to scientific account. He enriched our gardens with the splendid Rhododendrons of the Eastern Himalaya. His map of the passes leading to Tibet has, of late years, been found a document of the greatest importance by the Government of India. During his period of official employment at Kew, the interests of India were never lost sight of. In 1860 the cultivation of Cinchona was commenced at Kew from seeds procured from South America, which ultimately led to the successful introduction of the various species used in medicine into India. This was followed, in 1864, by a similar service for Ipecacuanha ; in 1876 by the introduction of the Caoutchouc-yielding trees of S. America into India, an enterprise destined to be fraught, in the future, with results of great importance ; finally, in 1880, by that of Cacao.

5. Although in the preparation of the Flora Sir Joseph Hooker has received extensive assistance and aid from every member of the Kew scientific staff, the whole of the work has passed under his own eye, and the vast bulk, including all the more difficult portions, has been executed with his own hand. It is safe to say that no other living botanist could have accomplished this ; none other possesses so vast a knowledge of the vegetable kingdom, or so intimate an acquaintance with India and its natural productions.

He completed a long official career in 1885, and since then has devoted what might have been a well-earned repose, exclusively to the completion of the Flora, with an unremitting determination which could not but command the highest admiration. It is the universal opinion of those competent to express an opinion, that what he has accomplished in this period even excels in excellence any of his previous work.

6. I believe I am only fulfilling my duty, as head of the establishment in which the work has been accomplished, in bringing these facts under the notice of the Secretary of State in Council. Sir Joseph Hooker doubtless finds his own satisfaction in the attainment of one of the great desires of his life. That life cannot be long prolonged, and it appears to me, in the interest of public policy, that such self-sacrificing labours on behalf of our great Dependency should not pass unnoticed at the hands of the Crown.

I am, &c.,
(Sgd.) W. T. THISELTON-DYER.

Sir Charles Bernard, K.C.S.I.,
India Office,
Whitehall, S.W.

Flora of Mauritius and the Seychelles.

In an address to the Royal Society of Mauritius delivered in January, 1884, Sir Henry Barkly, the Governor, said :—

"It is very satisfactory to me to learn further on the authority of one [Mr. L. Bouton] who has rendered such eminent services to Botany in the Mauritius, that materials for the publication of a complete Flora of the Island exist in greater abundance especially in the Museum of the Society than my venerated friend the Director of the Royal Gardens at Kew was aware of when he penned his recent Circular on Colonial Floras. I will readily write to Sir William Hooker on the subject if the Secretary will let me know what your collection contains, and if you will place that collection temporarily at the disposal of whatever botanist may be selected by the Imperial Government to edit the whole, the Secretary co-operating and furnishing diagnoses or copious notes, as Dr. Mueller has done in the case of the Australian Flora just published. I trust the work will be put in hand at no distant date. The Museum of the Jardin des Plantes and other collections in France must be very rich in Mauritian specimens, whilst at Kew I know several valuable Herbaria have from time to time been acquired, including, in all probability, that of the late Dr. Ayres which had been offered for sale by his Widow when I last heard. The expense of such a work so far as the Colony is concerned, would be very inconsiderable even including the outlay that it would be requisite to incur on the spot, and as I anticipate no objections to the vote, either here or at home, I will undertake to expedite the matter as much as I possibly can. Having from the first not only taken a warm interest in Sir William Hooker's plan for publishing uniform, inexpensive, descriptions of the Plants of all our Colonies, but given my best support to Sir William Denison's more ambitious design of regarding such a work as the commencement only of a General Natural History for each of the Dependencies of the British Empire, it will afford me very sincere pleasure to see a beginning made during my residence here, as has been the case in regard to the two last colonies over which I have presided."

It was not found advisable to commence the preparation of the Flora at Kew till material adequately representing it had accumulated. It was ultimately entrusted to Mr. J. G. Baker.

CROWN AGENTS TO MR. BAKER.

Downing Street,
19th February, 1876.

SIR,

The Crown Agents have been authorised to pay you a sum of £250 on day of the publication of the Flora of Mauritius and Seychelles, which they understand you have undertaken to prepare at the instance of the Colonial Government of Mauritius.

Twenty copies of the work will be required for transmission to that Colony, and I would thank you to inform me how many copies are to be printed and when ?

I am, Sir,
Your obedient Servant,
(Sgd.) W. T. SARGEAUNT.

J. G .Baker, Esq.,
Royal Gardens,
Kew.

KEW TO THE COLONIAL OFFICE.

Royal Gardens, Kew,
August 2nd, 1877.

SIR,

I have the honour to forward you a copy of the *Flora of Mauritius and the Seychelles*, prepared by Mr. J. G. Baker, First Assistant in the Herbarium of the Royal Gardens, under the authority of the Colonial Government of Mauritius.

The labour which Mr. Baker has expended upon this work is very considerable, and has been much increased since its commencement by the receipt at Kew of the large collection made in the Seychelles by Mr. Horne, Director of the Mauritius Botanical Gardens, and by Dr. Balfour, attached to the Transit Expedition, in the Island of Rodriguez. As the sheets have passed through the press they have been submitted to Sir Joseph Hooker, and I have every reason to believe that the Flora will be found both creditable and valuable to the Colony.

In a letter dated 19th February, 1876, the Crown Agents informed Mr. Baker that they were authorised to pay him for his services in the preparation of the Flora the sum of £250 upon the day of its publication. They further stated that twenty copies of the work would be required for transmission to Mauritius.

The publication of the Colonial Flora is undertaken by Messrs. L. Reeve & Co., on a general understanding that the sale of 100 copies is guaranteed. In other cases, as, for example, the *Flora of British India*, this guarantee has been given by the Government at whose instance the Flora has been prepared.

Mr. Baker informs me, however, that in his case he only

ascertained after a considerable portion of the work was accomplished that this guarantee had not been given, and he has had therefore to take 100 copies himself at the selling price. Owing to unavoidable circumstances, he has further had to pay a very heavy bill for the correction of the press, so that out of the whole sum of £250 paid to him by the Crown Agents he has only received as his own remuneration £101 5*s*.

Out of the 100 copies which he has thus taken from the publisher, Mr. Baker has supplied 20 to the Crown Agents of the Colonies free of charge, and about 30 others have been distributed to official persons to whom it is customary to supply copies of such works published at the instance of a Government establishment, as well as to various other persons who have given aid of various kinds in the preparation of the Flora.

On a review of the whole circumstances, it does not appear to me that Mr. Baker's services have received the reward which he expected when he undertook the preparation of the Flora, and to which I am disposed to think he is fairly entitled.

I have therefore to submit that the Government of the Mauritius be moved to approve the following arrangement :—

i. That of the remaining 50 copies in Mr. Baker's possession, 30 be placed at the disposal of the Crown Agents for transmission to the Colony.

ii. That the 20 remaining copies be handed over to this establishment for distribution to foreign and other establishments in correspondence with this.

iii. That a further sum of £100 be paid to Mr. Baker in discharge of all claims, whether for the preparation of the Flora or for the supply of copies to the Crown Agents.

I am, &c.,

(Sgd.) W. T. Thiselton-Dyer,
Assistant Director.

Hon. R. H. Meade.

Colonial Office to Kew.

Downing Street,
10th December, 1877.

Sir,

With reference to the letter from this Department of the 8th August, I am directed by the Earl of Carnarvon to inform you that the Government of Mauritius has complied with the proposals contained in Mr. Thiselton-Dyer's letter of the 2nd August relating to Mr. Baker, the author of *The Flora of the Mauritius and the Seychelles*, and that £100, in addition to the previous sum of £250, has been voted to him.

Printed copies of the Governor's Minute and of the Finance Committee's Report are herewith transmitted, and I am to request you to be good enough to communicate to Mr. Baker the substance of this letter, and to arrange that 30 copies of the book be forwarded to the Crown Agents for transmission to the Colony.

I am, Sir,

Your most obedient Servant,

(Sgd.) John Bramston.

Sir J. D. Hooker, K.G.S.I., C.B.

Flora of the Malay Peninsula.

The *Flora of British India* included the plants of the Straits Settlements, though not by any means exhaustively. But it did not include those of the Federated Malay States, of which the botanical exploration is comparatively recent.

Sir Cecil Clementi Smith, G.C.M.G., the Governor at the time, whose sympathy with science is not the least of his distinctions, warmly supported the proposal of the late Sir Hugh Low, G.C.M.G., British Resident at Perak, that a *Flora of the Malay Peninsula* should be brought into the scheme.

Colonial Office to Kew.

Downing Street,
31st May, 1888.

Sir,

I am directed by Lord Knutsford to transmit to you, for your information, a copy of a despatch from the Governor of the Straits Settlements, regarding the publication of a work on the Flora of the Colony and Malay Peninsula, and to inform you that the steps taken by the Governor, in connection with this book, have received his Lordship's approval.

I am, Sir,
Your most obedient Servant,
(Sgd.) Robert G. W. Herbert.

The Director,
Royal Botanic Gardens,
Kew.

Sir C. C. Smith to Lord Knutsford.

Government House,
Singapore,
30th April, 1888.

My Lord,

I had the honour to report to your Lordship that, with the concurrence of the Finance Committee of the Legislative Council, I have arranged for the publication of a work on the Flora of the Straits Settlements and Malay Peninsula. It will be brought out under the Editorship of Dr. [now Sir George] King, Superintendent of the Royal Botanical Gardens, Calcutta, with the assistance of Sir Joseph Hooker.

2. The cost of bringing out the work is estimated at one thousand five hundred and fifty pounds, which will be spread over four or five years. Of this sum the Colony will pay one-half, and the remainder will be paid by Perak and Selangor in the proportion of 2/3 and 1/3 respectively.

3. I propose to include in the estimates for next year, and in each following year for three or four years, the sum of one thousand dollars, which will be funded to meet the charges as they occur.

4. I trust that your Lordship will approve of my action in regard

to this interesting work, which should be specially valuable in promoting a knowledge of the indigenous economic products of this part of the world.

I have, &c.,
(Sgd.) CECIL C. SMITH.

The Right Hon.
The Lord Knutsford, G.C.M.G., &c., &c., &c.

MR. J. MACFARLANE, Honorary Secretary to the Asiatic Society of Bengal, to the Secretary to Government, Straits Settlements, Singapore, 15th April, 1902.

I am directed by the Council of the Asiatic Society of Bengal to acknowledge receipt of your letter No. Misc. 292. '02, of 16th January, 1902, informing the Society that His Excellency Sir Frank Athelstane Swettenham, K.C.M.G, the Governor of the Straits Settlements, has been pleased to make them a grant of $2,800 or Rs. 8,750 for the purpose of completing the publication of the *Materials for a Flora of the Malayan Peninsula*, by Sir George King, K.C.I.E., formerly Superintendent for the Botanic Garden near Calcutta.

2. The series of papers bearing this title is really a monograph, modelled on the lines of Hooker's well-known *Flora of British India*, of the flowering plants of the Malay Peninsula and the adjacent smaller islands, and it is as useful to the student as it is to the systematic botanist. The series was commenced in the journals of the Asiatic Society for 1899, and up to last year nearly 1,400 pages including 52 natural orders, or rather more than half the work, have been published. One order, *Leguminosæ*, has been contributed by Major [now Lt.-Colonel] Prain, and Dr. O. Stapf, of Kew, has collaborated in the preparation of the sub-order *Melastomaceæ*.

3. In 1897, the condition of the Society's finances came under discussion, and some doubts were expressed as to their ability to carry out so large an undertaking as the Malayan Flora. At this juncture the Government of the Straits Settlements, which was naturally interested in the completion of the work, held out to the Society the prospects of financial aid being afforded, and eventually sanctioned the liberal donation of Rs. 8,750.

4. I am to ask you to express to His Excellency the Governor the cordial thanks of the Society for this timely assistance, which places them in a position to complete without delay the publication of Sir George King's important contribution to the advancement of botanical research. The Society desire to offer for the acceptance of the Government of the Straits Settlements 30 copies of the Society's Journal from 1899 to 1901 containing the earlier numbers of the Flora, and the same number of future issues will be forwarded from time to time. They further propose to add to the title page of the later issues the following words :—'Published with the assistance of His Excellency the Governor of the Straits Settlements.'

Flora of Trinidad.

A proposal for the preparation at Kew of a Flora of Trinidad could not, under the circumstances described, be entertained.

COLONIAL OFFICE TO KEW.

Downing Street,
21st February, 1902.

SIR,

I am directed by Mr Secretary Chamberlain to transmit, for your consideration, a copy of a despatch from the Governor of Trinidad, suggesting that a comprehensive account of the Flora of the Colony is needed, and that it might be undertaken by a member of the staff at Kew. Mr. Chamberlain would be prepared to sanction a vote of £100 per annum for five years for this service, if you could make the necessary arrangements.

I am, Sir,
Your most obedient Servant,
C. P. LUCAS.

The Director,
Royal Botanic Gardens,
Kew.

KEW TO COLONIAL OFFICE.

Royal Botanic Gardens, Kew,
March 1st, 1902.

SIR,

I have the honour to acknowledge the receipt of your letter of February 21 (6464/02) on the subject of the preparation of a Flora of Trinidad at Kew.

2. At the present moment I am engaged in directing the preparation of two important works on the vegetation of Africa :—the *Flora of Tropical Africa* in nine volumes, of which six have been completed, and the Flora of South Africa in eight volumes, of which five have been published. These two undertakings absorb the whole of the time which can be spared, beyond their official duties, by the members of my staff, as well as such external technical assistance as is available.

3. Under these circumstances it is not possible to engage in any fresh work of the kind. The proposed Flora of Trinidad must, therefore, be deferred for the present. It will not, however, be lost sight of. It is possible that, at no very distant date, it may be found necessary to make some addition to the Kew staff, in which case I shall recur to the subject.

4. I may point out that the study of the vegetation of Trinidad has not been wholly neglected. It is largely included in Grisebach's *Flora of the British West India Islands*, published, in 1864, as one of the series of Colonial Floras initiated at the instance of the Duke of Newcastle, in 1859. An independent work brought up to date would no doubt, however, be desirable.

I am, Sir,
Your obedient Servant,
(Sgd.) W. T. THISELTON-DYER.

Flora of Bermuda.

Collections of great interest, representing the vegetation of various Atlantic Islands in British possession, had accumulated at Kew, but there would have been practical difficulties in including them in the general scheme. These islands were, however, visited during the Challenger Expedition. The botanical portion of the *Report of the Scientific Results of the Voyage*, was prepared at Kew, by Mr. W. B. Hemsley. It was determined to seize the opportunity to work out their Floras exhaustively. That of the Bermudas is contained in Part 1 of Volume 1 of the Botany. It was published in 1885.

Flora of St. Helena.

This, as well as those of Ascension and Tristan da Cunha are contained in Part 2, published in the same year.

Flora of Canada.

It is somewhat remarkable that the greatest of all our Colonies, Canada, has not so far been included in the general scheme. Sir William Hooker's *Flora Boreali-Americana* was completed in 1840, and nothing further on this side of the Atlantic has taken its place.

The following statement on the subject is taken from the Natural History Review for 1863 (p. 498) :—

"With regard to the British North American Colonies, much correspondence has taken place between Sir W. Hooker and the Colonial Office, the Governor General and Governors of the Colonies themselves, various scientific and otherwise influential gentlemen in Toronto, Montreal, and elsewhere, and, finally, several of the Commissioners for those Colonies who were present at the International Exhibition of 1862. At present all that can be reported is, that the feeling in favour of the undertaking is unanimous, that the required grant is considered so small as to be no obstacle whatever, and that no objection of any kind has been raised. For want, however, of some influential person at head-quarters, or from some other cause, no action has as yet been taken by the Governments before whom the proposal lies. The projected Flora would include all the British North American Colonies in one work of two or three volumes, requiring a grant of £150 per volume as remuneration for the Author, and the purchase on the part of the Colonial Governments of 100 copies of each volume, (at a price not exceeding £1 per copy), as encouragement to the publisher. The total expense to each Colony would not thus amount to more than £100, if each contributed an equal quota, and it were spread over some two or three years. An annual grant of £40 a piece would cover the whole."

It must, however, be remembered that Canada stands alone perhaps in the Empire in this respect. It has its own museums and scientific world and the co-operation of that of the United States. It may be confidently expected that it will in due time produce its own Flora or comprehensive account of its vegetation.

In the meantime the gap has been to some extent filled by the *Catalogue of Canadian Plants* by John Macoun, M.A., F.L.S., 1883-92.

Two conspicuous gaps in the scheme still remain to be filled :—

Flora of British Guiana.

Nothing has so far been done beyond the publication of numerous scattered papers on the results of various explorations and expeditions. Before a comprehensive work could be undertaken, a much more thorough examination of the native vegetation of the country would be necessary. At present the source even of some of its most important timbers is unknown botanically.

Flora of Honduras.

This still remains as it did forty years ago, botanically a *terra incognita.* The little material which exists in European herbaria has been discussed by Mr. W. T. S. Hemsley in the Botany of Godman and Salvin's *Biologia Centrali-Americana.* He gives (vol. iv., p. 151) the following account of the available material :—

" With the exception of a few odd plants introduced from time to time into English gardens, chiefly by different Governors of the Colony, there were, until recently, no recorded particulars of its vegetation, and exceedingly few dried plants in the Kew Herbarium. Quite recently a collection of forty-four species has been received at Kew from Mr. H. D. M. Hooper ; but, of course, this is insufficient to throw any light on the general character of the flora."

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